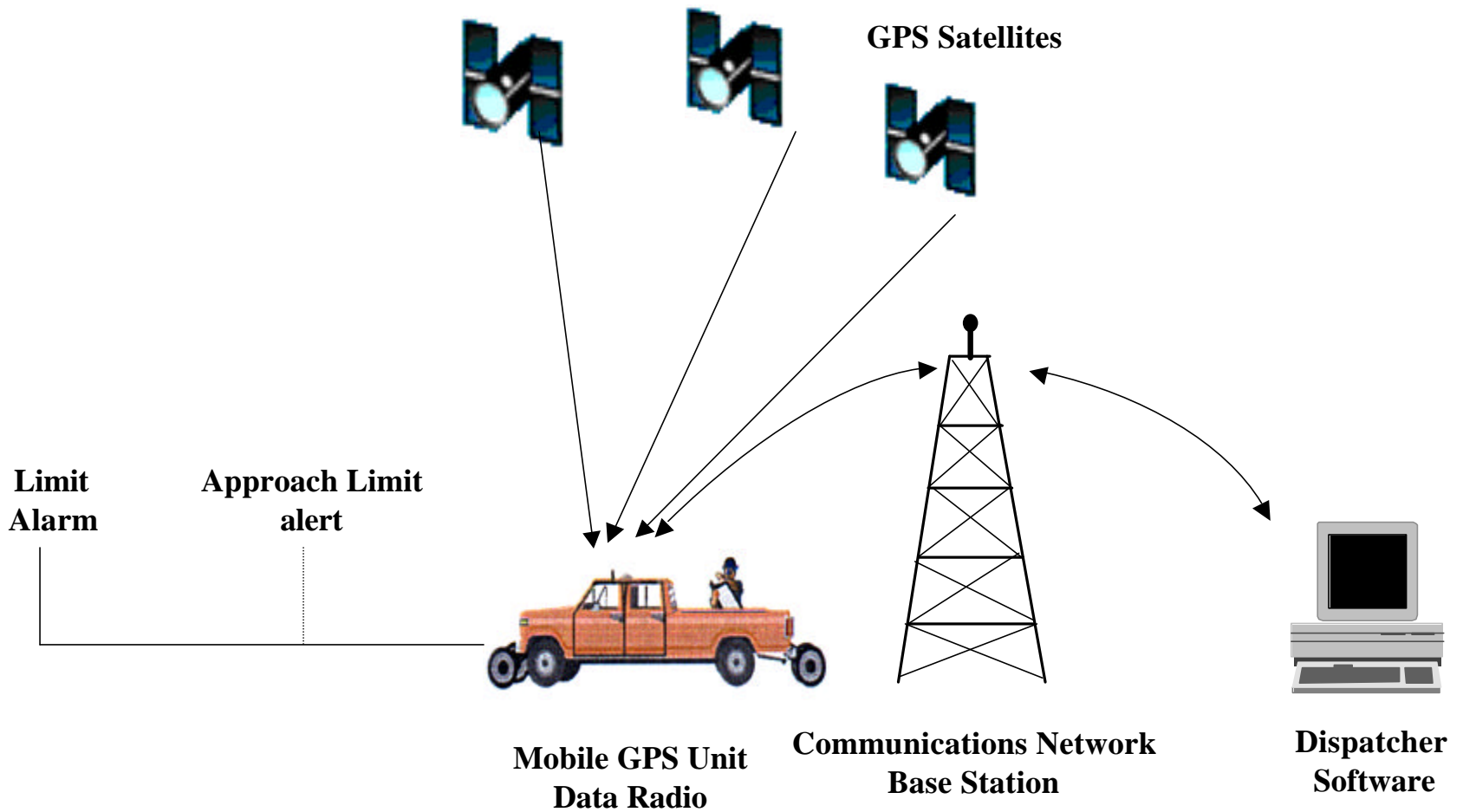
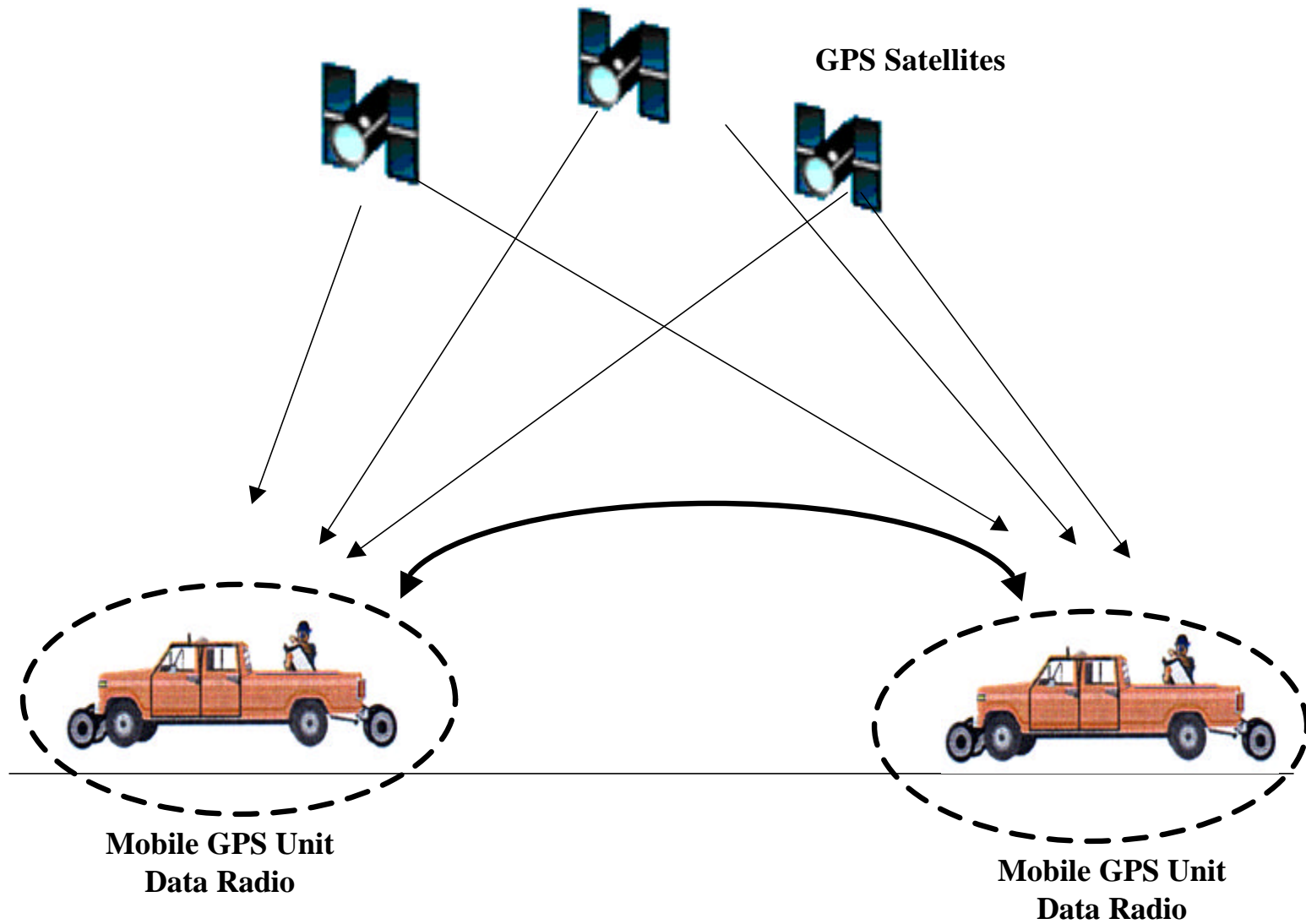


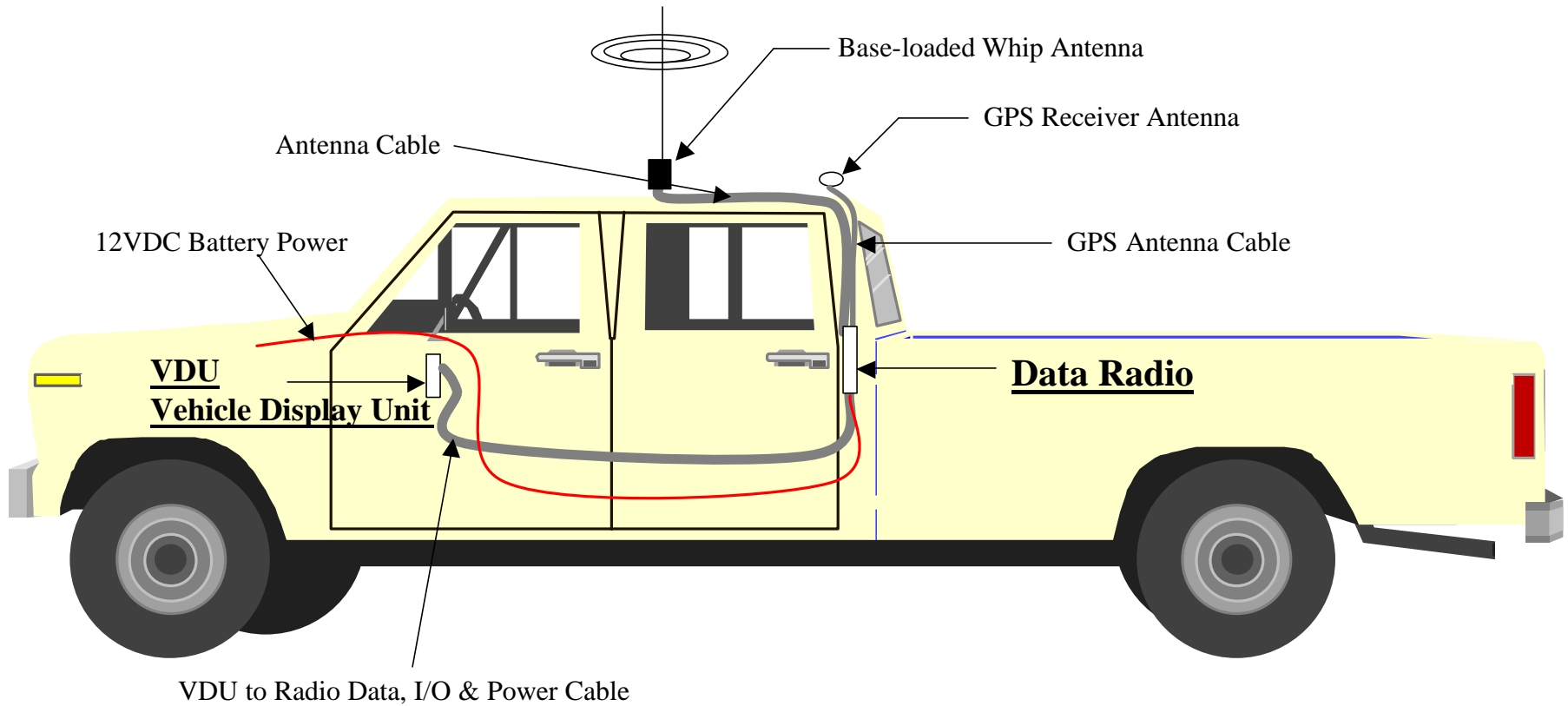


HILCS UPDATE





# Typical Vehicle Installation



## 2001 to present status

- Installed on 1 Subdivision for proof of concept
- Installed infrastructure on 10 Subdivisions 150 vehicles.
- Entire 33000 mile system GPS surveyed in 6 months.

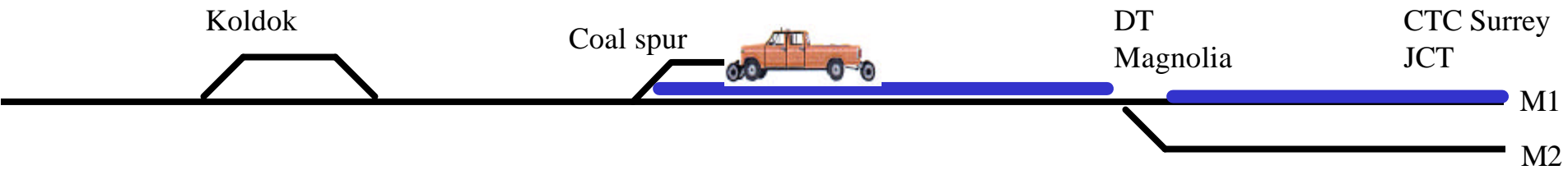
## 2002-2003 plan

- Install HLCS system in 360 vehicles.
- Install infrastructure on 47 Subdivisions.
  - Begin locomotive testing.
  - Change management process.

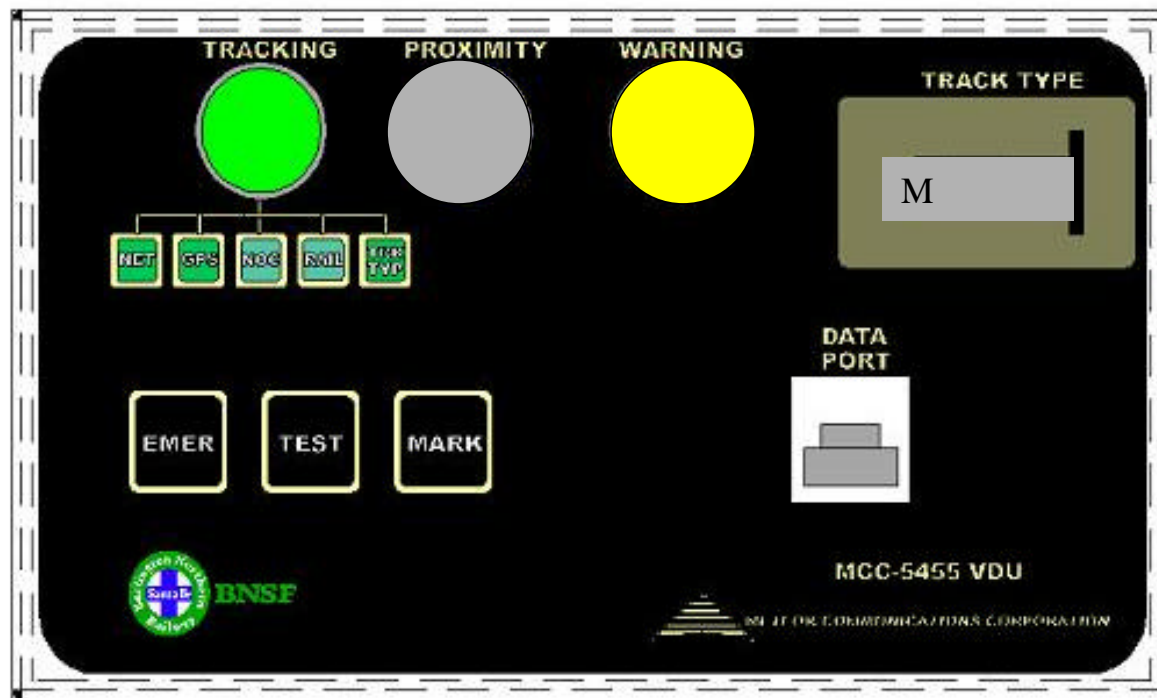


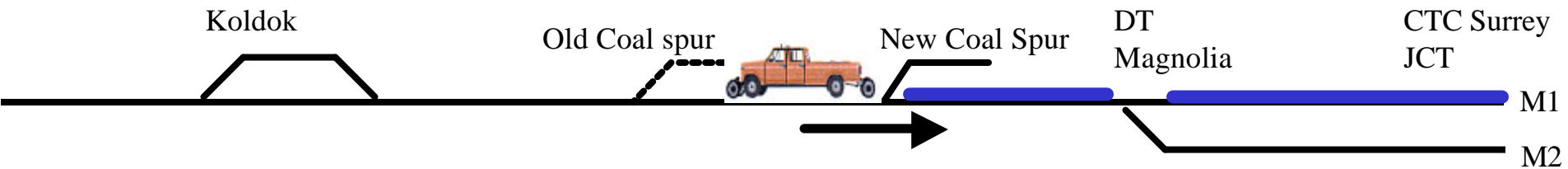
*Change management process*





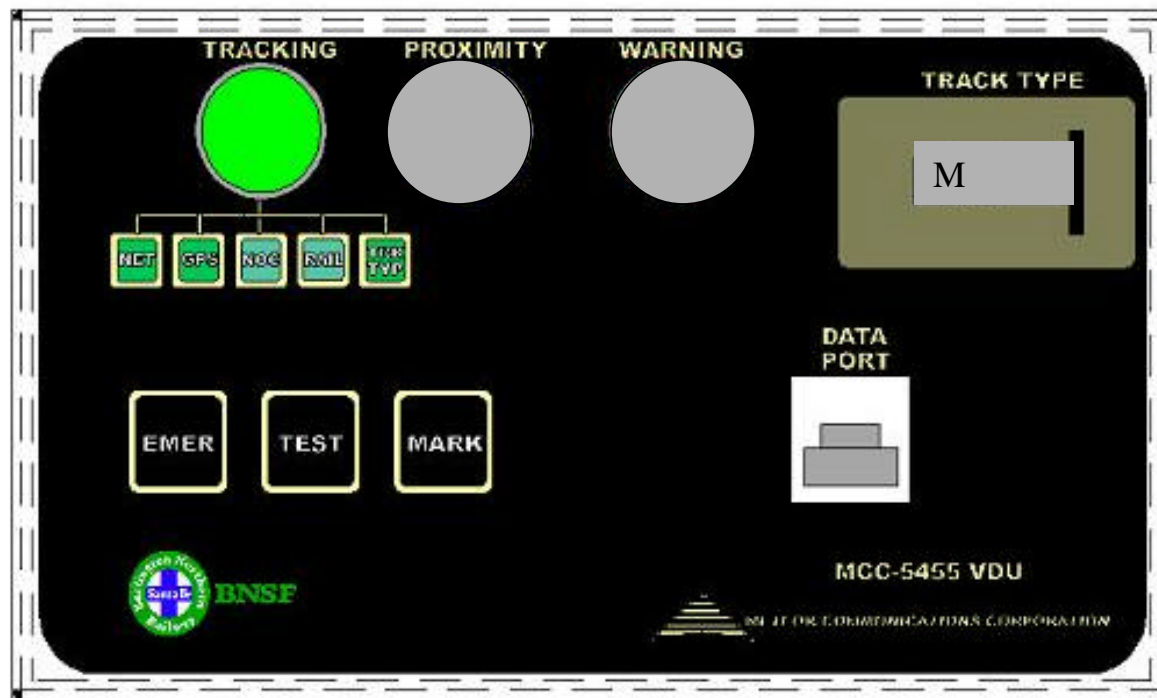
If the GPS database and the field database are identical.  
The system will work as intended.



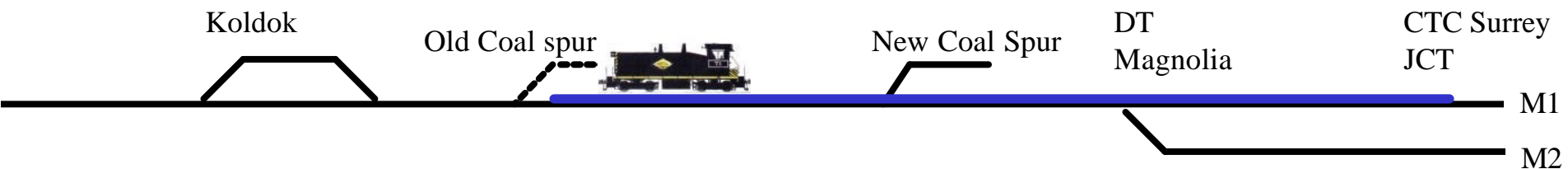


If the switch location of the Coal Spur switch is moved it must be updated in the GPS database!

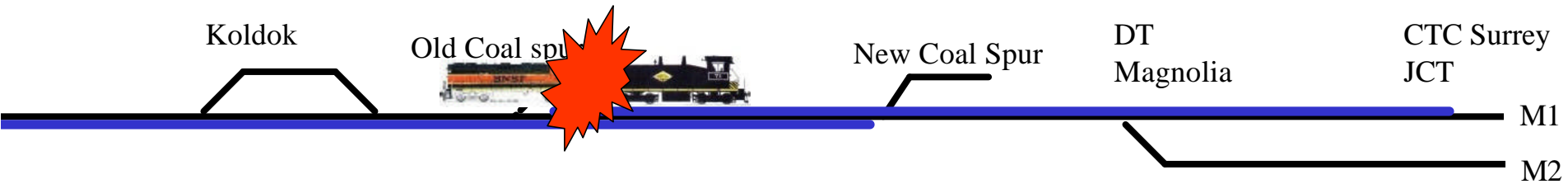
The GPS database must be accurate or alarms may not occur when they should!



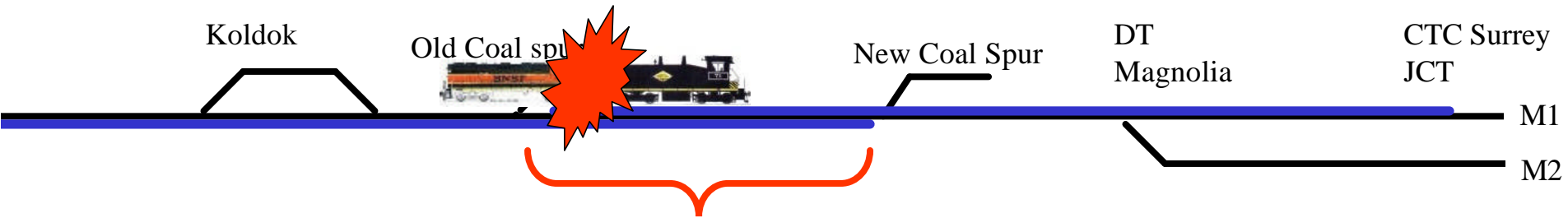




This data may be used to provide information to trains as well as MOW. Improper data could create a lap of authority. If train A has an electronic authority to proceed from CTC Surrey Jct to the Coal Spur switch the system will allow the train to proceed to the old coal spur switch location.



An opposing train with a hand written authority instructing them to proceed to the Coal Spur has authority to the new coal spur switch location.



In this example a misunderstanding between two systems has created a lap of authority between the Old and New coal spur switch locations. Proper reporting of some changes before they go into effect is critical to the safety of the system.

Changes that affect the safe movement of trains and equipment must be reported to the NCS group. Changes are the relocation, removal, or addition of:

1. Milepost signs.
2. Speed signs.
3. Switches including making a switch electric lock.
4. Grade crossings.
5. Grade crossing protection.
6. Signals.
7. Authority type (i.e. TWC to CTC).
8. Clearance joint location.

## Reporting methods and equipment

1. VDU
2. Approved GPS handheld device.
3. Approved linear measuring device.

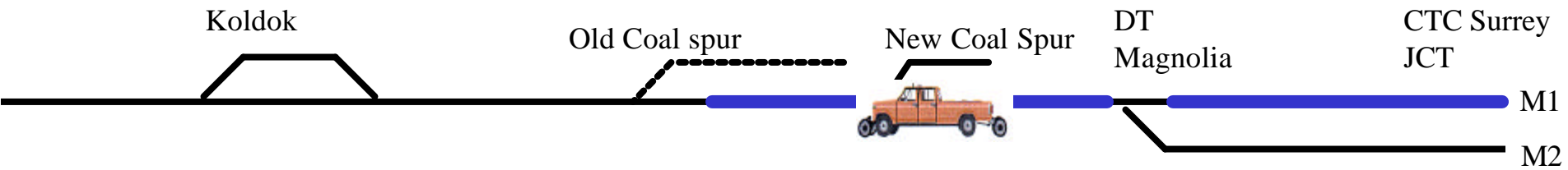
## NCS CHANGE MANAGEMENT FORM

|                                   |                           |                  |                           |
|-----------------------------------|---------------------------|------------------|---------------------------|
| 1. Division<br>Menu               | 2. Subdivision            | 3. Line Segment  | 4. Station of Change      |
| 5. Detailed Description of Change | 6a. Date of Report        |                  | 6c. Change Made by        |
|                                   | 6b. Change Type<br>Menu   |                  | 6d. Title                 |
|                                   | 7a. Date of Report        |                  | 6e. Phone Number          |
|                                   | 7b. Report Method<br>Menu |                  | 7c. Report Made by        |
|                                   |                           | 7d. Title        | 7e. Headquarters Location |
|                                   |                           | 7f. Phone Number |                           |

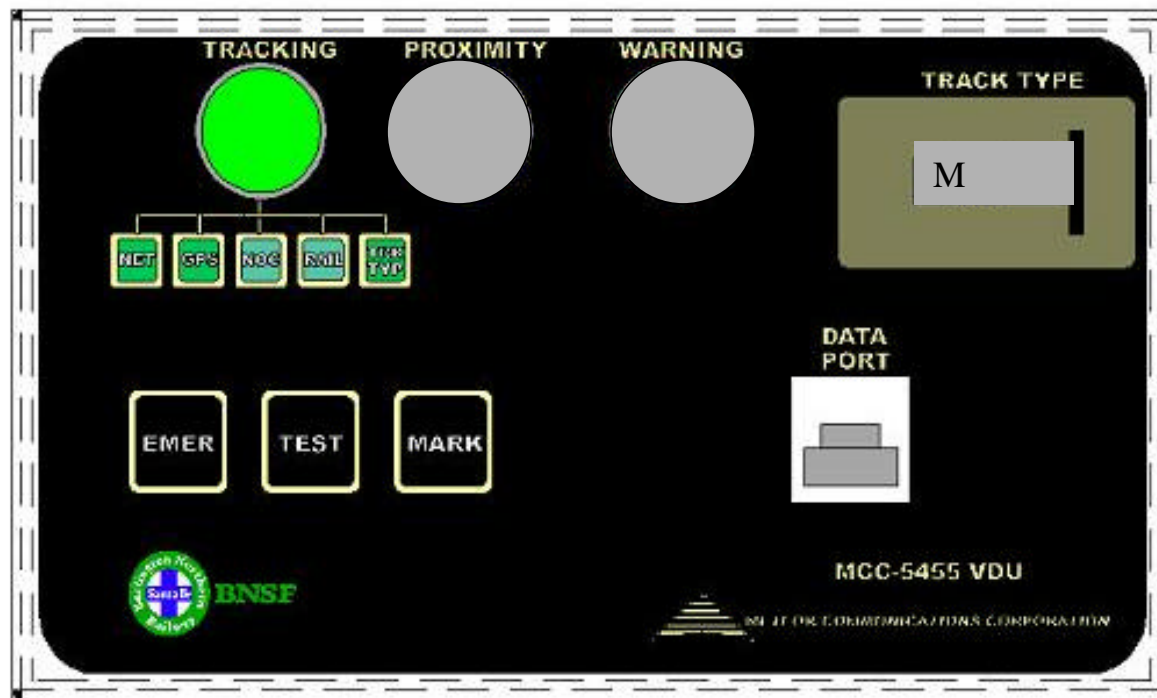
Fill out the Change Management Form NCS 0002 Rev 01

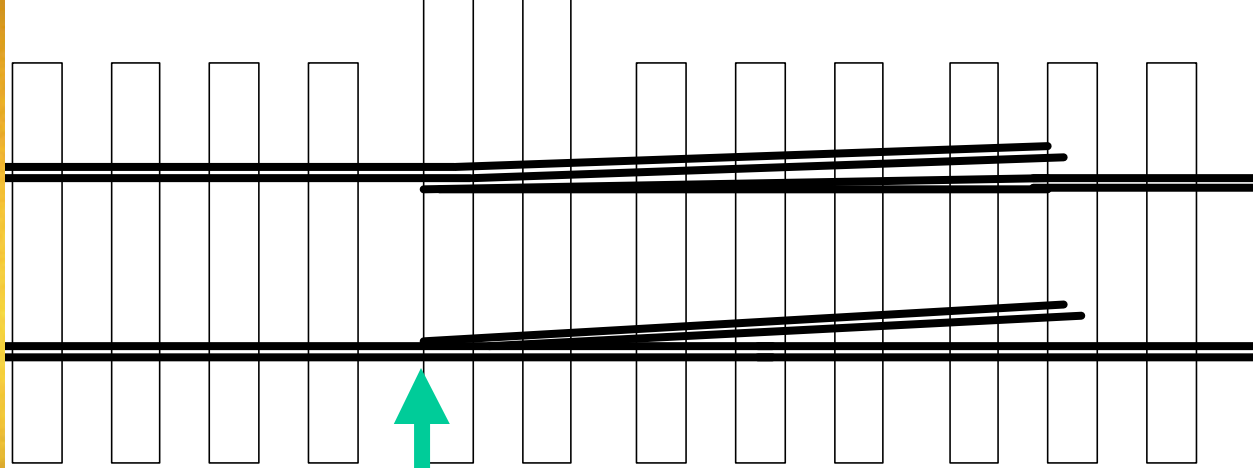
|                          |                          |   |  |  |
|--------------------------|--------------------------|---|--|--|
| 8. Feature<br>Menu       | 9. Milepost              | 10. Track Name<br>Menu                  | 11. Operation Type<br>Menu   | 12. Change Type<br>Menu                          |
| 13. Latitude<br>° ' " "  |                          | 14. Longitude<br>° ' " "                |  | 15. Altitude<br>Feet                             |
| Switch Type<br>Menu      | Turnout Type<br>Menu     | Turnout Direction<br>Menu               | <input type="checkbox"/> Bungalow<br><input type="checkbox"/> Case | Trackside Location of Case or Bungalow<br>Menu   |
| Sign Type<br>Menu        | Other Sign Type          | Sign Trackside<br>Menu                  |  |  |
| Wayside Type<br>Menu     | Other Wayside Type       | Trackside<br>Menu                       | <input type="checkbox"/> Bungalow<br><input type="checkbox"/> Case | Trackside Location of Case or Bungalow<br>Menu   |
| Structure Type<br>Menu   | Bridge Type<br>Menu      | Over/Under Pass Number of Lanes<br>Menu |  | Angle to Track<br>Menu                           |
| Grade Crossing<br>Public | Protection Type<br>Menu  | Number of Lanes<br>Menu                 | Angle to Track<br>Menu   | Trackside Location of Case or Bungalow<br>Menu   |
|                          | Street Name              | DOT Number                              | <input type="checkbox"/> Bungalow<br><input type="checkbox"/> Case | Street side Location of Case or Bungalow<br>Menu |
|                          | Highway Name             | City                                    | County   | State  |
| Signal Head Type<br>Menu | Signal Direction<br>Menu | Signal Fixture<br>Menu                  | Trackside<br>Menu  | Signal Number                                    |
|                          | Signal Aspect            | Signal System Type                      | <input type="checkbox"/> Bungalow<br><input type="checkbox"/> Case | Trackside Location of Case or Bungalow<br>Menu   |





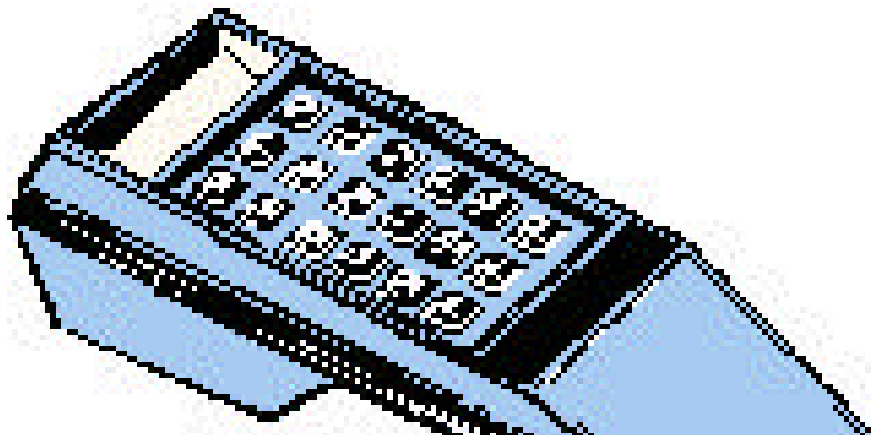
While making the track change and before releasing the track to the dispatcher.





Line the on track vehicle GPS antenna perpendicular to the changed feature.





Call the NCS Hotline.



When the NCS Change Specialist gives the OK, press the “MARK” button on the VDU once every 30 seconds for 5 minutes.



Some changes do not affect the safe movement of trains and equipment. These changes are important because these assets are being kept track of in a database. These changes can be reported to the NCS group after the change goes into effect.

1. Switch size.
2. Switch change from hand throw to spring.
3. Signal head change from searchlight to color light.
4. Grade crossing protection from flasher to flasher and gates.
5. Pedestrian crossing removed.

Changes not affecting the movement of trains and MOW can be reported 4 different ways:

1. Fill out the Change Management Form NCS 0002 Rev 01 and fax it to a NCS Change Management Specialist.
2. Fill out the Change Management Form NCS 0002 Rev 01 and transfer the information to the electronic version and e-mail it to NCS Change Management.
3. Access the NCS Change Management Web page on the BNSF Railway Intranet and enter the feature change information in the web format.
4. Call the Hot line phone and relay the information off the Change Management Form NCS 0002 Rev 01 to a change management specialist.